

Rwanda: a case study on wetland governance and its impacts on urban city planning

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Ramsar Workshop of the STRP National Focal Points of Africa & Other Wetland Experts Emperors Palace, Johannesburg, South Africa, 30 November – 2 December 2010



Rwanda



Area : 26.338 sq km Average population density: 397 people per sq km People per area of arable land: 500 people per sq km Gorilla berigei beringei 160 Kilometers

Major Problems



Pressures on land, water, flora and fauna and other non-renewable resources.

This is most evident in land degradation, soil erosion, decline in soil fertility, deforestation, wetland degradation, loss of biodiversity and pollution



Illustrations-Waste



Waste from economic activities such as near this wetland this garage in Gastata can result in environmental pollution



Solid waste is often disposed of in unsuitable areas such in this wetland in Gastata



High population density and land scarcity has forced people to settle right along the ecologically fragile river banks leading to soil erosion and wetland degradation

Status of water and wetland resources

Rwanda is divided into two major drainage basins: the Nile to the east covering 67 per cent and delivering 90 per cent of the national waters and the Congo to the west which covers 33 per cent and handles all national waters.



1971-2011

Wetlands



The country's hydrological network includes numerous lakes and rivers and its associated wetlands. An inventory of marshlands in Rwanda conducted in 2008 identified shows 860 marshlands, covering a total surface of 278 536 ha, which corresponds to 10.6 per cent of the country surface, 101 lakes covering 149487 ha, and 861 rivers totaling 6462 km in length



Inventory



860 Swamps (278 536 ha)

- -10.5% of Rwanda area
- -41% Covered by Natural Vegetation
 -53% Covered by Fields (148 344 ha)
 -6% Fallows (Jachères)

101 Lakes – 149 487 ha



861 Rivers – 6 462 km

Wetlands Management Modalities



– 347 Swamps – 15 689 ha proposed for exploitation under a basic EIA (6%)

Wetlands Governance

•Set legal Instruments for Rwanda Marshlands Sustainable Management

•Create Capacity Building Tools in order to manage Rwanda Marshlands in Sustainable Manner

•Elaborate Technical Tools for Marshlands and Watershed Management **Protection of river banks is essential for the integrity of the water and wetlands resources**







Rwanda Wetlands Bill

The Bill is a legal instrument:

- To improve wetlands (marshlands) governance in Rwanda
- To strength the legal status of marshlands and to determine the conditions of their management and their use, in a sustainable manner.

Content:

- □ 8 Chapters and 69 Articles covering:
- **Administrative Structure Principles**





Focus on REMA's Biodiversity Information System

Objective:

To design and setup a Biodiversity Information System Platform for Rwanda Wetlands that will be provided:

- Real time data collection (PCs Internet, Phone, Cellular Phone, PDA Smartphone, Local Applications);
- A two way communication with field environmental data collectors;
- Automatic generation of trend charts, interactive maps and consolidated environmental data tables;
- Analytical tools and ability to export environmental data;
- Real time compilation of environmental information in the field;
- Automatics and rapid evaluation of environmental indicators.



fig. 2 - Schema showing the RBIS architecture and data flows.



Wetlands governance Impact on the conceptual view of the community centre approach to developing the proposed Kigali City Master Plan





Linkage with National Strategies





In this regard, the EDPRS prioritizes the planning and development of improved rural and urban human settlement consistent with the contemplated sustainable land use and environmental protection scheme.

This will allow the issues of land use and environmental health to be addressed.



The Urban Sustainability



In the environmental crisis facing the planet, it is critical to ensure that development in Kigali is guided by the key principles of sustainability.

However, in case of Rwanda, addressing the economic and social issues is as critical as attending to the environmental issues. As such the Master Plan has been developed in line with the 'triple bottom line' approach.

An urban sustainability framework has been developed and lists down the key environmental, social and economic issues, and presents key performance indicators and recommendations which need to be achieved to address these critical issues.

Triple Bottom Line Approach to Urban Sustainability

ENVIRONMENT

-RIENDLY

SUSTAINABLE

SOCIAL

HARMONY





Role of the Urban Sustainability Framework in City Development and Management

Nyarugenge District - Location and Connectivity

Ramsar



The Urban Sustainability Framework Proposed for Nyarugenge District: Environment



Key Issues	Key Targets and KPIs	Key Strategies
• Increasing urbanization leading to	• No development in unbuildable areas(slopes >	Zoning enforcement and land
potential contribution to global	20%, wetlands and forests)	acquisition for forests and wetlands
warming (increasing carbon footprint)	• Reforestation of steep slope areas (slopes >40%)	• Development of parks in the
• Deforestation and landslides	• Reclamation and conservation of all wetland areas	wetlands along
• Developments in areas of steep	• Transportation modal split of 70-30	development areas for conservation,
slopes	• 30% of total number of trips to be green trips	educational and recreational
• Developments in the wetland areas	• 100% waste water treatment within all	purposes
• Surface and ground water pollution	developments in the district	• Developing tourism and
		recreational activities
		• Ensuring clean, green and safe
		development
		through good governance and City
		management

Based on a visioning process and the framework described above, as well as the broad vision suggested for Nyarugenge District in the Development Plan for the City of Kigali, the vision proposed for Nyarugenge District is the following::

'Kigali's Revitalised Central Business District and Vibrant New Growth Area'

Goals

- Ramsar 1971-2011
- Revival of the Existing Central Business District and Creation of Well Distributed District Level Urban Nodes
- Renewal of Existing Urban Areas
- Development of Comprehensive New Townships
- Creation of Alluring Recreational Features and Tourist Attractions
- Transit Oriented Development supported by an Efficient and Cost-effective Transportation System
- Provision of Integrated, Timely, Cost Effective and Eco-friendly Infrastructure Facilities
- Conservation, Revitalisation and Management of the Unique and Rich Natural Features

GOALS/OBJECTIVES/STRATEGIES/RECOMMENDATIONS CONNECTED TO WETLANDS WISE USE



Goal:

Creation of Alluring Recreational Features and Tourist Attractions

Strategy. Optimise the use of natural features, such as wetlands, steep slopes and forests around the townships to create a variety of recreational venues.

Recommendation:

Develop linear parks along wetlands and natural drains in all townships and residential settlements, which not only offer integrated recreational open spaces, but also double up as wetland conservation and surface water management features.

GOALS/OBJECTIVES/STRATEGIES/RECOMMENDATIONS CONNECTED TO WETLANDS WISE USE



Goal :

Conservation, Revitalisation and Management of the Unique and Rich Natural Features.

Objective:

- To ensure protection of all wetland systems.
 - **Strategies:**

1 - Stipulate upstream measures to control the quantity and quality of discharge into the wetlands.

2 - Mandate downstream measure to ensure wetland conservation.

Recommendations:

1 - Provide a 10m - 40m buffer to all natural drainage lines.

2- Ensure measure to manage the drainage run-off quality.

3 - Clear all existing developments within the wetland boundaries.

Opportinuties Plan



Flat areas along wetlands available for township development.



Existing public facilities in the urban areas can be reused.



Flat areas along ridges available for resort development.



Figure 2.11: Nyarugenge District - Opportunities Plan Source: Surbana



Constraints Plan amsar CLEET TILL To Ruhengeri (DRC 71-2011 To Byumba / Uganda **KIGALI CITY** SUB-AREAS PLANNING LEGEND Wetland Waterbody **Existing Roads** --- Sector Boundary - District Boundary GASABO DISTRICT ---- Approved Imudugudu Boundary Existing forest areas need to be conserved Existing dense informal settlements difficult to redevelop Wetland areas - need to be conserved To Kigali International NYARUGE Airport/Tanzania Iouros: Suttana Urban Planning Droup, 2009 EY MAP. Existing high density informal residential development - constraint redevelopment To Butare / Burundi Steep slope greater than 20% gradient - requires measures to counter soil erosion Undevelopable areas under steep slopes. 100 CONTRACT AND IN KICUKIRO DISTRICT Approved imudugudu Surbana sites constraint New City Centre 168 Jolan Bukit Maruh 801-81 Surbasa Ora, Singapore 18168 www.surbata.com Company Regn No: 2083048512 redevelopment at Gaharga City of Kigat P.O. BOX 3127 Kigali, Resetts Africa AND REAL PROPERTY. NYARUGENGE DISTRICT CONSTRAINTS PLAN wern west REVISION 02 004 C 900 RWF0801-NY-05 Ċ STAD AC410 Feb 2010 9.00 44 44 200 FILE REF : RWF0801-NY Dass_Opp and Core_Aug2009 pd 1014440 To Future Bugesera a President International Airport

Areas under wetlands need to be conserved.

Figure 2.12: Nyarugenge District - Constraints Plan Source: Surbana



Proposed Green and Blue Plan4

For the sake of recreation and tourism the land area is broadly divided into 4 zones – the urban attractions, the urban parks, Forest/ Mountains Ridges Parks and the wetland Parks.

An extensive green connector network in the form of green strips, bridges, green fingers etc. links all the parks and green areas across the District and ensures seamless pedestrian connectivity.

Kimisagara Sector: Proposed Green and Open Spaces Plan









Legend :

- Police Station
- 2 Municipal Office
- 3 Existing Church
- 4 Mixed Use Development
- Existing Drain with Green Buffer
- 6 Existing Commercial Market
- 7 New Shopping Centre
- 8 Public Plaza
- 9 Multi Level Carpark
- Pedestrian Spine
- Community Hall, Library & Kindergarten
- Kimisagara Neighbourhood Park

Kimisagara Sector: Illustration of the Development in Kimisagara as part of the Gitega-Kimisagara Green Link.



What technical and scientific assistance Ramsar STRP and Partners can provide

Proposed Implementation Mechanism

- •Implementation of Zoning Plan
- •Capital Improvement Plan (CIP)
- •Special Projects

Proposed follow up measures

•Establishment of Legal Framework

•Monitoring and Evaluation:

•Establishment of Planning Manual

Development of Special Control Guidelines

•Special control guidelines are required to ensure quality development within the City, to ensure sustainability and to enhance local culture and identity.

•Wetlands monitoring and evaluation guidelines is recommended, in addition to the Master Plan and Zoning Guidelines

- •Waste management Guidelines
- Pollution control guidelines

Capacity Building

GIS and wetlands monitoring

Proposition



Prepare a detailed compendium on existing policy, legal and regulatory wetlands and urban planning frameworks in Africa.

The work will include feedback on the application of Strategic Environment Assessments (SEAs) and linkages to wetlands and urban planning assessments.





Details 1

Analyze existing environmental policy, legal and regulatory frameworks with a focus on successful practices in wetlands and urban planning

Propose recommendations to bridge identified gaps and identify harmonization principles to link up national initiatives to regional or sub-regional frameworks.

Conduct capacity needs assessment for the effective integration of SEAs in regional policy and legislative frameworks and harmonization with national policies, plans and programmes using South Africa and a reference case. The assessment should focus on high environmental impact policies, plans and strategies/programmes such as those targeting economic development, poverty reduction and productive sectors as potential users of SEAs.



Details 2

Prepare a detailed report, including a factsbased stocktaking analysis and practical recommendations on how to enhance harmonization of environmental policies, legislative and regulatory frameworks and promote the integration of strategic environment assessments with the wetlands and urban planning as an entry point.



Facilitate the Validation Workshop of findings and recommendations and incorporate key stakeholder comments if any, into a final version of the compendium that will be considered for adoption by the COP and other key stakeholders.







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